1. INTRODUCTION

Michigan is bordered by the Great Lakes. Twenty percent of the world's freshwater is contained in these lakes. The Great Lakes are the largest group of freshwater lakes on earth. Forty thousand (40,000) of the 95,000 square miles of Great Lakes are contained with Michigan's boundaries. In addition, Michigan's land mass includes 11,000 inland lakes and 36,000 miles of rivers and streams. Clean water is one of our greatest natural assets.

Management practices on forest lands, by all owners, will determine if the forests remain healthy and productive. It is true that healthy, stable and productive forests are closely associated with the highest quality of surface and ground water. Integrating the water and soil protection practices described in this manual can prevent erosion, sedimentation and soil compaction, an essential part of maintaining a healthy forest and healthy watersheds. Other uses and activities can also have long-term impacts on ground water.

The 19 million acres of forested land in Michigan are a great natural resource asset. The sustainable management of Michigan's forests serves to protect the health of Michigan's waters and the health of Michigan's communities. These forests, about one-half of the State's land area, are owned by many people. The largest owner group is the 385,000 individuals whose private holdings range from small woodlots to tracts of several thousand acres. Fifty three percent (53%) of Michigan's forested acres are held by this group. The next largest ownership group is public forest lands (20% owned by the State, and 15% by the Federal government). The forest products industry and timber investment firms own the remaining 12% of forest land.

Forest landowners and their agents and contractors are responsible for any damage to streams, lakes, and wetlands resulting from any aspect of a logging or other forest management operation. Environmental degradation is covered by existing laws in Michigan. Violation of those statutes or failure to secure the necessary permits can result in financial penalties to the landowner. The landowner or their designated agent must obtain a permit to cross a stream, construct a road that disturbs more than one acre of soil, or engage in an earth change within 500 feet of water body. **Regular inspection of all roads, bridges, culverts, and preventive actions taken to prevent erosion and the movement of sediment into surface waters, are part of a high quality and sustainable forest management operation**.

This manual was revised with assistance from staff in the Michigan Department of Natural Resources (DNR) and the Michigan Department of Environmental Quality (DEQ). It takes language extensively from the original 1994 DNR publication, "Water Quality Management Practices on Forest Land". Many of the graphics are courtesy of the Wisconsin Department of Natural Resources' (WDNR) BMP Field Manual. The U.S. Environmental Protection Agency (EPA) document entitled "National Management Measures to Control Nonpoint Source Pollution from Forestry" was also a source of information in developing this manual. This manual provides information and guidance on how to plan, design and implement a system of Best Management Practices that will protect water and soil quality while harvesting timber or engaging other forest management treatments.

In forestry operations, poor management practices can degrade surface water and groundwater quality by introducing the following major pollutants: sediment (mineral and organic), nutrients, chemicals, heat and debris. The purpose of this manual is to assist the forest landowner and persons who do forest management work on the ground. It provides specific guidance on how to protect water quality, critical habitat, and aquatic resources, while conducting timber harvesting or other forest management activities.

The guidelines described in this manual can be adjusted to the conditions of the site at the time logging or other forest management activities are carried out. The goal is to provide guidance that protects water and soil quality, while allowing for the efficient removal and transport of

forest products, as well as allowing for post-harvest treatments such as prescribed burning or site preparation/regeneration practices.

To insure clarity between legal requirements and voluntary soil and water protection practices and guidelines described in this manual, the following symbols have been used:

All **voluntary practices** are denoted by the symbol " ▸ ".

All **legal requirements** are denoted by the symbol "  ".

2. LAWS AND PERMITS

In addition to the BMPs and other types of management practices described in this manual, loggers, land managers and landowners should be aware of existing regulations relating to forest management and water quality protection. Most of these laws and regulations are listed in Appendix C, List of Applicable Laws in Michigan. This chapter summarizes certain permits related to water quality. For more information, please contact your local DEQ office.

 Stream Crossings

When constructing a new or upgrading an existing stream crossing, there are three specific statutes of P.A. 451, 1994 Natural Resources and Environmental Protection Act (NREPA), that always apply. These are: Part 31, Water Resources Protection; Part 91, Soil Erosion and Sedimentation Control; and Part 301, Inland Lakes and Streams. For each part, there are a legal set of rules and regulations that apply. In certain cases, Part 303, Wetlands Protection and Part 305, Natural Rivers may also apply if a stream crossing occurs in a wetland environment or on a stream within the watershed boundary of a legally designated Natural River system.

To be in compliance with parts 31, 301 and 303, the responsible party must complete the DEQ/United States Army Corps of Engineering (USACE) "Joint Permit Application" (JPA) package. The JPA covers permit requirements pursuant to State and Federal rules and regulations for construction activities where the land meets the water and including streams and wetlands. These types of areas are often referred to as the land/water interface.

The JPA is available electronically for on-line submittal through the Michigan Timely Application and Permit Service (MITAPS). Visit: www.michigan.gov/jointpermit for more information about MITAPS, to download or view the JPA.

If you have questions regarding completing the JPA, or how to properly size and install a culvert, contact your local DEQ office. A DEQ office location map and staff contact information can be viewed at www.michigan.gov/deq.

Please note that a Part 91 permit, Soil Erosion and Sedimentation Control (see below) is usually required before constructing any roads or landings. Landowners or their designated representative should also note that a permit from the DNR, under Part 305, Natural Rivers may also be required if conducting forest management activities within one of the 16 designated Natural River systems.